The Road Network Operator’s Perspective

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Challenging Road Conditions
Challenging Road Infrastructure
Challenging Introduction Conditions

- **Test phase**
- **Introduction phase**
- **Saturation phase**

- **Rate of automated vehicles**
- **Overall traffic benefits**

**Operator’s view:** challenges first, benefits later

Mixed traffic
Challenging mix of automation levels

• New traffic management strategies needed?
  ... for mixed traffic conventional/automated vehicles

• Infrastructure upgrades needed?
  ... e.g. digitalisation, connectivity, localisation, etc.

• Adaptation of legal frameworks needed?
  ... e.g. traffic and vehicle regulations

➤ Activity fields for road operators
Benefits of the Digital Infrastructure

• The **digital infrastructure** supports testing and introduction of automated vehicles

• **Key elements**: real-time traffic information, digital communication interfaces, video detection, HD maps, etc.

• **Connectivity** to automated vehicles support **Cloud Services** for a variety of use cases
Connectivity
A key enabler for future traffic management

Now
Information exchange
Specific Use Cases

Future
Integration of vehicles into traffic management

Road operator / Traffic Management
Traffic information, Road works warning, In-vehicle signage

Automated and Connected vehicles
Floating Car Data

Speed and lane advisory, sensor data, HD maps,…

Real-time Vehicle Data
Hybrid Connectivity as Service Enabler

Road operator
Traffic Management and Digital Infrastructure

Car2X Roadside Infrastructure
Cloud Services
Cellular 4G/5G
Automated and Connected vehicles

Car2X ITS-G5
Conclusions

- The responsible road network operator plays a key role in the testing and introduction of automated vehicles.
- Digital infrastructure, connectivity and cloud services are key enablers for connected & automated driving.
- They are necessary to integrate automated vehicles in the traffic management.
- Managing mixed traffic, especially in the introduction phase, will be a major challenge for road network operators.
- Interconnection of infrastructure and vehicles requires cooperation between automobile OEMs and road network operators.